HomeLink™ Phoneline + 10/100 Network PC Card

HPN100
HomeLink Phoneline + 10/100 Network PC Card

User Guide

LINKSYS®

LIMITED WARRANTY
Linksys guarantees that every HomeLink Phoneline + 10/100 Network PC Card is free from physical defects in material and workmanship under normal use for one (1) year from the date of purchase. If the product proves defective during this warranty period, call Linksys Customer Support in order to obtain a Return Authorization number. BE SURE TO HAVE YOUR PROOF OF PURCHASE AND BAR CODE ON HAND WHEN CALLING. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE AND BAR CODE. When returning a product, mark the Return Authorization number clearly on the outside of the package and include your original proof of purchase and bar code.

IN NO EVENT SHALL LINKSYS' LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT FROM DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THE PRODUCT, ITS ACCOMPANYING SOFTWARE, OR ITS DOCUMENTATION. Linksys makes no warranty or representation, expressed, implied, or statutory, with respect to its products or the contents or use of this documentation and all accompanying software, and specifically disclaims its quality, performance, merchantability, or fitness for any particular purpose. Linksys reserves the right to revise or update its products, software, or documentation without obligation to notify any individual or entity. Please direct all inquiries to:

Linksys P.O. Box 18558, Irvine, CA 92623.

FCC STATEMENT
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna
• Increase the separation between the equipment or device
• Connect the equipment to an outlet other than the receiver's
• Consult a dealer or an experienced radio/TV technician for
  assistance

Contents

Introduction

Congratulations on your purchase of the Linksys HomeLink Phoneline + 10/100 Network PC Card. This exciting new technology is being offered in compliance with the standards of the Home Phoneline Networking Alliance (HomePNA). The Linksys HomeLink Phoneline + 10/100 Network PC Card now offers instant connectivity to multiple PC's over a home's existing telephone lines. You can network any notebook computer by connecting it to any standard phone line. There's no need for a switch, a hub, or even any additional cables - the network runs on standard home-grade telephone wires just like the ones you use everyday.

The HomeLink Phoneline + 10/100 Network PC Card is the ultimate in versatile connectivity for mobile users. The 16-Bit PC Card's coupler is equipped with two standard RJ-11 telephone ports and a 10/100 dual-speed Fast Ethernet port. You can connect to any 1Mbps HomeLink network or any 10BaseT/100BaseTX network without swapping cards. The card fits into any standard Type II PCMCIA slot, leaving room for a 56K modem or other PC Card in dual-slot notebooks. You can share Internet access via a dial-up, cable modem or DSL connection, as well as files, printers, and CD-ROM drives at 1Mbps without interrupting regular telephone service. Since your HomeLink network runs on regular telephone cables, there's no extra hardware to buy. Just plug it into any standard wall jack and you're networked!

The Linksys HomeLink Phoneline + 10/100 Network PC Card utilizes Advanced Micro Devices' (AMD®) PCnet™-Home technology. This new technology lets your phone line carry computer data as well as regular telephone voice service. You can also use feeds from broadband connections like cable modems or Digital Subscriber Lines (xDSL). You can talk on the telephone, download files from the Internet, and share resources over a network all at the same time. Every standard telephone jack in the home is capable of hosting a PC - you can connect up to 25 computers, thus transforming the home's telephone wiring into an easily expandable network. Want to add more PCs? Just put a HomeLink card in the computer and plug it into your phone jack. It's that simple!

Features

- Build A Network Using Your Existing Telephone Line
- No Additional Hubs or Cabling Needed
- Type II PCMCIA Card (16-Bit)
- Card has 2 RJ-11 Modular Telephone Ports and 1 RJ-45 10BaseT/100BaseTX Fast Ethernet Port
- 1Mbps Transfer Rate Over Telephone Lines
- Also Connects to 10/100 Networks with No Configuration
- Perfect for File and Printer Sharing, Email, Web Access, Gaming and More
- Dual-Speed RJ-45 Port Automatically Detects Cabling Speed
- Works with Your Existing HomeLink Network Cards
- HomePNA Compliant
- Compatible with Virtually All PCMCIA and CardBus-Equipped Notebook Computers -- Perfect for Single-Slot "Thinline" Notebooks
- Free Technical Support
- Limited 1-Year Warranty

How Does It Work?

The Linksys HomeLink Phoneline + 10/100 Network PC Card utilizes a technology known as Frequency Division Multiplexing (FDM) which essentially divides the data travelling over the phone lines into separate frequencies - one for voice, one for high-bandwidth net access such as DSL, and one for the network data. These frequencies can coexist on the same telephone line without impacting one another.

The 1 Megabit-per-second (one million bits-per-second) data rate is fast enough to run demanding home applications such as file and printer sharing, games, and email. Want to surf the web? No problem – you can share one modem or high-speed Internet connection over the entire network using the Internet LanBridge software package. The HomeLink Phoneline + 10/100 Network PC Card's data transfer rate is 18 times that of the fastest analog modems available, which run at 56Kbps (fifty-six thousand bits-per-second). Even high-speed modem, xDSL, and ISDN connections will perform at full speed on a home network. The HomeLink Phoneline + 10/100 Network PC Card is the perfect tool to introduce the benefits of networking to your home or office.

Note: Because of the limitations of standard telephone cables, HomeLink HomePNA devices require that your cabling does not exceed a total length of 500 feet for your entire network.

Package Contents

• One HomeLink Phoneline + 10/100 Network PC Card
• Cable Coupler with Two RJ-11 Ports and One RJ-45 Port
• One Standard Telephone Cable
• One Driver Diskette
• User Guide and Registration Card

If any of the above contents are missing, consult your Linksys retailer.

Sharing Your Resources

The HomeLink Phoneline card brings the advantages of inexpensive network-ing to your home or office. Any device on the network, including CD-ROM drives, hard drives, and printers, can be used by any of the PCs that you hook up to the network. The installation instructions in this user guide will guide you through the process of setting up your networked PCs so that all of their avail-able resources can be shared. Of course, you have control over the **sharing rights**, so you will be able to isolate devices or drives that you do not want to be accessible from the rest of the network.

It is important to note that if you want to use a networked device on a PC other than the one that the device is attached to, you must configure the PC to handle the device.

Sharing Your Internet Connection

Your HomeLink network will let you talk on the telephone and access the Internet at the same time **only** if you are using an xDSL or cable modem con-nection. If you are using an analog modem or other device that requires you to dial out to your Internet Service Provider (ISP), then, obviously, your telephone line is already in use, and you can not talk on the phone. Your internal network data travels on a separate frequency, so your network communications will not be interrupted no matter what type of Internet connection you have or whether or not you are using the telephone.

See note on **page 46** for important modem hints.

Hardware Setup

Before You Begin

The HomeLink Phoneline + 10/100 Network PC Card is equipped with two phone wire ports, also known as **RJ-11** ports, for use with a Phoneline network that utilizes your existing telephone system. The card also has an **RJ-45** 10BaseT Ethernet port for use with 10Mbps Ethernet networks.

If You Want to Use Ethernet...

If you plan on connecting the HomeLink Card to a 100Mbps or 10Mbps Ethernet network, only use Category 3 or 5 twisted-pair cabling. Network cabling is available in a number of different grades. For best results, we recommend using 8-wire, category 5 unshielded twisted-pair for an Ethernet network, although category 3 can be used successfully. Category 5 is more reliable, and it is compatible with faster 100Mbps networks - a useful feature if you plan on upgrading from Ethernet to Fast Ethernet in the future.

Keep in mind that the RJ-11 and RJ-45 capabilities cannot be used at the same time. If the one is in use, the other is **automatically disabled**.

Both Category 3 and Category 5 twisted-pair cabling can be purchased from most computer stores, or if you prefer, you can crimp your own cables. See page 45 for wiring information.

Whether you're building a 10Mbps or 10/100 network, twisted-pair cabling should always be used with a hub, which is a box with a row of 10BaseT or 10/100 ports. Each PC plugs into the box with its own twisted pair cable. Because all of the PCs' cables converge at the hub's central location, a twisted-pair network is often referred to as a star configuration.

Do not connect PCs together with twisted-pair cabling without using a hub. Although your network may work, communication will be unstable. The cable that runs from your computer's HomeLink card to your hub should not exceed **100 meters** (328 feet) in length.

Installing the Hardware

1. Turn off your PC and any devices attached to it.

2. Snap the flat end of the media coupler into the HomeLink Phoneline +10/100 Network PC Card. It should lock firmly into place.

3. Locate your PC's card slot. The slot is usually located on the side or front of the PC. Slide the HomeLink Phoneline +10/100 Network PC Card into the slot with the triangle on the card facing up. The 68-pin end goes in first. See that the card is seated snugly in place.

4. If your computer has more than one slot, insert the HomeLink Phoneline +10/100 Network PC Card into the first slot (slots are usually numbered in sequential order starting with 0 or 1). After verifying that the HomeLink Phoneline +10/100 Network PC Card's hardware and software are working correctly, you can always move the card to a different slot later if needed.

Installing the RJ-11 (Telephone) Cabling

Attach one end of the telephone wire to the HomeLink card's RJ-11 telephone port. There are two RJ-11 ports and only one RJ-45 port - the RJ-11 ports are the smaller ones. Connect the other end of the cable into a telephone jack in your wall.

If you are using an analog telephone, you can either connect the device to a second phone jack (recommended), or you can connect your telephone directly to the second port on your HomeLink card.

If you have only one phone jack in your room and you want to use your modem or fax, it is recommended that you purchase a **two-way adapter** that can turn your single phone jack into a double phone jack. Plug your telephone or fax into one phone jack, and your HomeLink Network PC Card into the other. If you have two or three PCs in one room with only one telephone jack, you can connect several of the computers together using the **Daisy Chain** method.

Plug your first PC with a Phoneline card into the phone jack in the wall, then use the other phone cable port on the card to connect to your second PC.

Continue to connect up to twenty-five PCs on one chain. If you want to use your telephone or fax machine, add a two-way splitter on your wall's phone jack or connect the device to the open telephone port on the last card in your daisy chain. If you are daisy chaining **more than 2 PCs**, you should connect modem to a different wall phone jack, or obtain a 2-way splitter, (see page 46).

Installing the RJ-45 (Ethernet) Cabling

Remember that if you choose to use the RJ-45 port on your HomeLink card, the RJ-11 Phoneline networking capabilities automatically become disabled. The two **cannot** operate at the same time.

Attach one end of an Ethernet cable into the HomeLink card's RJ-45 port. Plug the other end of the cable into a 10BaseT or 10/100 switching hub. If you plan to use both 10BaseT and 100Mbps network segments on the same network, you'll need a **dual-speed** hub or switch that allows segments of different speeds to communicate. For more information on 10/100 dual-speed hubs and switches, visit the Linksys web site or call (949) 261-1288.

2 PCs are connected through your home's telephone line.
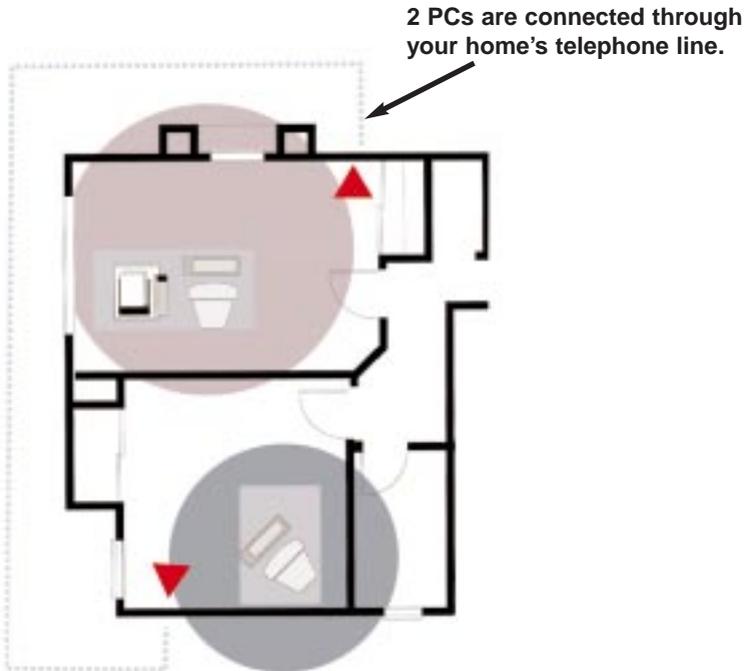
About the Software

The HomeLink Phoneline + 10/100 Network PC Card requires two different kinds of software in order to work:

Socket and card services are special software drivers that allow a PC card to communicate with your computer.

Plug and Play operating systems like Windows 98 and 95 already have these services built in.

Network drivers allow the card to communicate with your network at large. The HomeLink Phoneline + 10/100 Network PC Card disk includes drivers for many network operating systems, including Windows 98, Windows 95, Windows NT, and DOS. When the HomeLink Phoneline + 10/100 Network PC Card is up and running, it will talk to your PC's card slot, which will talk to the Card services, which will finally talk to the network drivers and the network at large.

Socket and Card Services

Socket and card services allow your computer to recognize a PC card when it is inserted into your PC's card slot. Your PC will need some kind of services installed in order to use the HomeLink Phoneline + 10/100 Network PC Card. **Most slot-equipped PCs have socket and card services pre-installed by the computer's manufacturer**. If you are upgrading your PC by adding a new slot, then you need to upgrade your services as well. You have two choices:

• Use Generic Services
If your computer doesn't have services (or you don't know what kind are installed), you may be able to use the 10/100 card's generic services, which are included on the EtherFast card disk. If you want to use the generic services, go to the next page.

• Contact Your PC's Manufacturer
If your computer doesn't have services, and the generic services contained on the 10/100 card's software disk don't seem to work with your PC, contact your computer's manufacturer to find out (1) what kind of services your computer uses, or (2) how to get compatible services if your computer doesn't have them.

Network Driver Setup

Follow these instructions carefully. You can view or print the setup directions from your favorite word processor, or if you prefer, use the reader that is included on the 10/100 card's disk. To access the reader, put the HomeLink 10/100 PC Card disk into drive A and run the README.EXE program.

To run the program from DOS, for example, you would type:

```
a:\readme.exe
```

and press **Enter**. If you are using Windows 3.x, you could click on File and Run in the Program Manager, type a:\readme.exe, and press Enter.

Preparing to Install the Software

Setting up the HomeLink card's software involves installing a **network driver** onto your computer. The driver will allow the card to communicate with your Windows software package. Before attempting to install a network driver for the HomeLink card, Windows 95, 98 or NT should already be installed on your computer. The HomeLink Phoneline + 10/100 Network PC Card driver setup for these three operating systems is covered in this user guide.

You will need a floppy drive on every PC onto which you wish to install the network drivers. We recommend that you read through the installation instructions for your operating system before continuing with the installation.

If you are using **Windows 2000,** also known as Windows NT 5.0, the drivers for your operating system are included on the HomeLink floppy diskette. If you received a diskette *without* the Windows 2000 drivers, you can get them from the Download Center on the Linksys website. Please note that the drivers and the operating system are still in development. When Microsoft officially releases the Windows 2000 operating system, Linksys will provide updated drivers and technical support for the operating system. If you choose to install the HomeLink Phoneline + 10/100 Network PC Card on a Windows 2000 PC, you do so at your own risk.

Windows 98 Setup

Boot up your Windows 98 PC with the HomeLink Phoneline + 10/100 PC Card hardware installed. Follow the instructions below.

1. Windows 98 will automatically detect the presence of the HomeLink Phoneline + 10/100 Network PC Card in your computer. If Windows 98 goes directly to the windows desktop and does not display the *New Hardware Found* window, refer to the Troubleshooting section of this guide.

2. While the Update Device Driver Wizard window is visible, put the HomeLink Phoneline + 10/100 Network PC Card program disk 1 into drive A and click on **Next**. A window will appear and ask you *What would you like Windows to do?*

3. Select *Search for the best driver for your device (Recommended).* Click on **Next**.

4. A window will appear asking where you would like Windows 98 to search for the driver. Make sure that *Floppy disk drives* is selected, and click **Next** to continue.

5. Windows will begin searching your drives for the correct device drivers. A message will appear that reads *Windows found the Linksys HomeLink + 10/100 PC Card driver*. Click on **Finish**.

If Windows cannot find the driver for the card, skip to the Troubleshooting section on page 51.

6. Windows 98 will begin copying a number of files onto your computer. If Windows asks you to supply your original Windows 98 installation or setup files, insert the CD-ROM or disks as needed, and direct Windows 98 to the proper location, (eg: D:\win98, or the *appropriate drive letter* of your CD-ROM drive). If Windows asks you to supply a driver that contains the letters PC100, type **a:** in the box that pops up.

During the installation, windows may ask you for a computer and workgroup name. If so, refer to instructions 10-12 on pages 16 and 17. Otherwise, continue with the installation. Windows will finish copying all of the necessary files to your system. When asked if you want to restart your computer, click **No**. Once you are back at the Windows 98 desktop, click on the **Start** button. Click on **Settings**, then **Control Panel**.

7. Double-click on the **Network** icon. The Network window will appear. Click on the **Configuration** tab.

8. Make sure that the following network components are installed:

Client for Microsoft Networks
Linksys HomeLink + 10/100 PC Card (PCM100TH)
NetBEUI
TCP/IP

There may be other components listed in addition to the ones shown above. This is fine. Different components are required for different network configurations. If you are missing required components, you'll need to install them manually. Refer to page 58 in the Troubleshooting section of this user guide.

Please Note: If you need to install the TCP/IP Protocol, contact your system administrator or refer to the Windows 98 documentation. Linksys does not provide technical support for the setup or configuration of the TCP/IP protocol.

9. In the Primary Network Logon box, select **Client for Microsoft Networks**.

10. Click on the **Identification** tab.

Type the name of your computer in the Computer name box. Make up a name that is unique from all the other computers' names on the network. Call it whatever you'd like, (ex: Ace, Master, etc.), as long as you keep the name under 15 characters long and you don't use spaces or special characters, (like dashes).

11. Type the name of your workgroup in the Workgroup box. The name you type should be the same workgroup name in use by all of the other PCs on the network. The Workgroup box is case sensitive. Use the same case that is in use on your other computers.

12. Enter a description of your computer in the Computer Description box. This box is optional.

13. Click on the **Access Control** tab. Make sure that *Shared-level access control* is selected. If the setting is on User-Level access control and you can't change it, skip to the Troubleshooting section on page 52.

14. Click on the **OK** button. Your system may or may not ask you for your Windows 98 CD-ROM or the location of the 98 installation files. Direct Windows to the appropriate location, (D:\win98, C:\windows\options\cabs, etc.).

15. Once Windows is done copying the necessary files, the System Settings Change window appears. Remove all disks from your computer and click on **Yes** to restart your PC. If you don't see this window, simply close down Windows 98 and restart your computer. The installation is complete. Remember to remove the installation disk from the floppy drive.

Look at the HomeLink Card's cable coupler. If your cabling is properly attached and the network is detected, the green Link light will be on, and the Activity (ACT) light will be flickering or solid.

16. Once the computer has restarted and Windows 98 has booted up, a Logon window will appear requiring you to enter a username and password. Make up a username and password, enter them, and click **OK**. Do not click the **Cancel** button, or you won't be able to log onto the network. If the a logon does not appear or if it does not allow you to log on, refer to the Troubleshooting section in the back of this guide.

17. Once you are at the Windows 98 desktop, double-click on the **Network Neighborhood** icon. You should see the name of the network, and/or the names of the other PCs on the network. In order to see your computer in Network Neighborhood, you need to enable file and printer sharing, which is covered on pages 20-22.

If you don't see anything at all, press the F5 key on your keyboard a few times to refresh the screen.

If you only see your computer in Network Neighborhood, skip to the Troubleshooting section.

If you see all computers on the network except yours, and the other PCs can't see your computer, see the Troubleshooting section.

Client Setup

Before enabling File and Printer Sharing, you should prepare your computer to be used with any file servers that may be on the network. Turn to the next page. If you are not using Windows 98 with an NT or NetWare file server, skip the next two paragraphs. Otherwise:

• Connecting to a NetWare File Server

Click on **My Computer**, **Control Panel**, and **Network**. Change the **Network Logon** to *Client for NetWare Network*. Next, double-click on the *client for NetWare networks*. Put your server's name in the *Preferred Server* box. Click in the **Enable Logon Script Processing** box. Click on **OK** and restart your PC.

Note: This method is effective for NetWare 3.11 and 3.12 servers. for NetWare 4.x or higher, you should obtain and use Client32 instead.

• Connecting to a Windows NT Domain

Click on **My Computer**, **Control Panel**, and **Network**. Change the **Primary Logon** to *Client for Microsoft Network*. Double-click on the *Client for Microsoft networks*. Check the *Log into Windows NT domain* box. Put your NT domain name in the Windows NT domain area. Click on **OK** and restart your PC.

Continue with the installation instructions that appear on your screen, if any. When you're finished, restart your computer.

Note: In order for you to communicate with the other PCs on your network, you must enable **File and Printer sharing**. Please go on to the next page.

Preparing to Use File and Printer Sharing.

The instructions below explain how to turn on file and printer sharing in Windows 98 so that your computer can be accessed by others and vice-versa.

1. Start up Windows 98. If you are asked to log in, be sure to give your correct username and password.

2. To set up sharing for the first time on a computer, click on **Start**, **Settings**, **Control Panel**, then double-click on **Network**.

3. Click on the **Configuration** tab, followed by the **File and Printer Sharing** button. The **File and Printer Sharing** window will appear.

• If you'd like others to be able to access the files on your PC's hard drive, select *I want to be able to give others access to my files*.

• If you'd like to share your printer with other users on the network, select *I want to be able to allow others to print to my printer*.

4. Click on the **OK** button. *File and Printer Sharing for Microsoft Networks* should now appear in the list of installed components. Click **OK**. When asked to restart your PC, choose to do so.

Enabling File Sharing

After following the preparation instructions, double-click on your **My Computer** icon. A window of available disk drives will appear. Using your right mouse button, click once on the drive or folder that you want to make available to other users. Click on **Sharing**, followed by the **Sharing** tab. Click on **Share As**. In the Share Name box, enter a name for the drive or folder you are sharing, (eg: C-Drive, CD-ROM, Leela, etc.).

Next, decide on the type of access that you want to give other users.

• **Read-Only access** lets other users view the files on your PC.
• **Full access** lets users create, change, or delete files on your PC.
• **Depends on Password** lets users have Read-Only and/or Full access, depending on the password that you decide to give them.

Use your mouse to select the type of file sharing access that you want other users to have. If you want to assign access password(s), type them into the Password box(es).

If you are sharing a cable modem or DSL braodband connection that you will be using to access the Internet, you should protect all of your shared drives and printers with private passwords.

When you're done, click on the **Apply** button, followed by **OK**. Your drive(s) can now be accessed from other users whenever they click on their Windows Network Neighborhood icons. If a user tries to access one of your drives or folders that's password-protected, he or she will be asked for the appropriate Read-Only or Full access password.

How To Share Printers

1. After following the steps on pages 20-21, double-click on your **My Computer** icon.

2. Click on the **Printers** folder. A window of available printers will appear.

3. Using your right mouse button, click once on the printer that you want to share with other users.

4. Click on **Sharing**, followed by the **Sharing** tab. Click on **Share As**. In the Share Name box, give a name to the printer you're about to share (Jack's HP4, for example). If you want to assign a password to the printer so only certain users can access it, type a password in the Password box. When you're done, click on the **Apply** button, followed by **OK**. Your printer(s) are now shared.

5. When you're finished, restart your PC, log into your network, and double-click on **Network Neighborhood**. You should be able to se the other computers on your network. The installation is complete.

Note: Not all printers may be shared on the network or you may require special instructions. Refer to your printer's user guide or contact your printer manufacturer.

Windows 95 Setup

After installing the HomeLink Phoneline + 10/100 Network PC Card hardware in your computer, follow the instructions below to install the HomeLink Phoneline + 10/100 Network PC Card's Windows 95 network driver from the card's program disk.

Please keep in mind that the installation procedure for the network driver will vary slightly depending on the version of Windows 95 you are using and your current system configuration.

To install the network driver, Start up your computer and Windows 95.

1. Windows 95 will automatically detect the presence of the HomeLink Phoneline + 10/100 Network PC Card in your computer. If Windows 95 goes directly to the windows desktop and does not display the *New Hardware Found* window, refer to the Troubleshooting section of this guide.

2. While the Update Device Driver Wizard window is visible, put the HomeLink Phoneline + 10/100 Network PC Card program disk 1 into drive A and click on **Next**.

3. Windows will begin searching your drives for the correct device drivers. A message will appear that reads *Windows found the Linksys HomeLink + 10/100 PC Card (PCM100H1) driver*. Click on **Finish**.
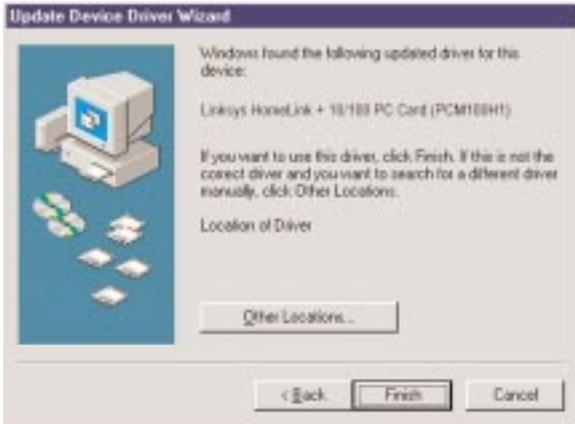
If Windows cannot find the driver for the card, skip to the Troubleshooting section on page 51.

4. Windows 95 will begin copying a number of files onto your computer. If Windows asks you to supply your original Windows 95 installation or setup files, insert the CD-ROM or disks as needed, and direct Windows 95 to the proper location, (eg: D:\win95, c:\windows\options\cabs, etc.). If Windows asks you to supply a driver that contains the letters PCM100H1, type **a:** in the box that pops up.

During the installation, windows may ask you for a computer and workgroup name. If so, refer to instructions 8-10 on page 27 and 28. Otherwise, continue with the installation. Windows will finish copying all of the necessary files to your system.

5. When asked if you want to restart your computer, click **No**.

6. Once you are back at the Windows 95 desktop, click on the **Start** button. Click on **Settings**, then **Control Panel**.

7. Double-click on the **Network** icon. The Network window will appear. Click on the **Configuration** tab.

8. Make sure that the following network components are installed:
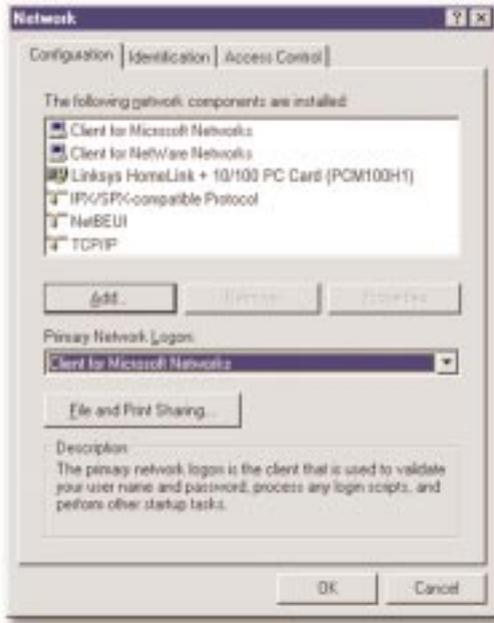
Client for Microsoft Networks
Client for Netware Network
Linksys HomeLink Phoneline + 10/100 Network PC Card (PCMPC100)
IPX/SPX-compatible Protocol
NetBEUI
TCP/IP

There may be other components listed in addition to the ones shown above. This is fine. Different components are required for different network configurations. If you are missing required components, you'll need to install them manually. Refer to page 58 in the Troubleshooting section of this user guide.

Please Note: If you need to install the TCP/IP Protocol, contact your system administrator or refer to the Windows 95 documentation. Linksys does not provide technical support for the setup or configuration of the TCP/IP protocol.

9. In the Primary Network Logon box, select **Client for Microsoft Networks**.

10. Click on the **Identification** tab. Type the name of your computer in the Computer name box. Make up a name that is unique from all the other computers' names on the network. Call it whatever you'd like, (ex: Tardis, Leela, etc.)

11. Type the name of your workgroup in the Workgroup box. The name you type should be the same workgroup name in use by all of the other PCs on the network. The Workgroup box is case sensitive. Use the same case that is in use on your other computers.

12. Enter a description of your computer in the Computer Description box. This box is optional.

13. Click on the **Access Control** tab. Make sure that *Shared-level access control* is selected. If the setting is on User-Level access control and you can't change it, skip to the Troubleshooting section on page 52.

14. Click on the **OK** button. Your system may or may not ask you for your Windows 95 CD-ROM or the location of the 95 installation files. Direct Windows to the appropriate location, (D:\win95, C:\windows\options\cabs, etc.).

15. Once Windows is done copying the necessary files, the System Settings Change window appears. Remove all disks from your computer and click on **Yes** to restart your PC.

If you don't see the System Settings Change window, simply close down Windows 95 and restart your computer. The installation is complete. Remember to remove the installation disk from the floppy drive.

Look at the EtherFast Card's cable coupler. If your cabling is properly attached and the network is detected, the green Link light will be on, and the Activity (ACT) light will be flickering or solid.

16. Once the computer has restarted and Windows is up, a Logon window will appear requiring you to enter a username and password. Make up a username and password, enter them, and click **OK**. Do not click the **Cancel** button, or you won't be able to log onto the network. If the a logon does not appear or if it does not allow you to log on, refer to the Troubleshooting section in the back of this guide.

17. Once you are at the Windows 95 desktop, double-click on the **Network Neighborhood** icon. You should see the name of the network, and/or the names of the other PCs on the network. In order to see your computer in Network Neighborhood, you need to enable file and printer sharing, which is covered on pages 31-33.

If you don't see anything at all, press the F5 key on your keyboard a few times to refresh the screen.

If you only see your computer in Network Neighborhood, skip to the Troubleshooting section in the back of this guide.

If you see all computers on the network except yours, and the other PCs can't see your computer, see the Troubleshooting section.

Client Setup

Before enabling File and Printer Sharing, you should prepare your computer to be used with any file servers that may be on the network.

If you are not using Windows 95 with an NT or NetWare file server, skip the next two paragraphs. Otherwise:

• Using the Card to Connect to a NetWare File Server

Click on **My Computer**, **Control Panel**, and **Network**. Change the **Network Logon** to *Client for NetWare Network*. Next, double-click on the *client for NetWare networks*. Put your server's name in the *Preferred Server* box. Click in the **Enable Logon Script Processing** box. Click on **OK** and restart your PC.

Note: This method is effective for NetWare 3.11 and 3.12 servers. for NetWare 4.x or higher, you should obtain and use Client32 instead.

• Using the Card to Connect to a Windows NT Domain

Click on **My Computer**, **Control Panel**, and **Network**. Change the **Primary Logon** to *Client for Microsoft Network*. Double-click on the *Client for Microsoft networks*. Check the *Log into Windows NT domain* box. Put your NT domain name in the Windows NT domain area. Click on **OK** and restart your PC.

Continue with the installation instructions that appear on your screen, if any. When you're finished, restart your computer.

Note: In order for you to communicate with the other PCs on your network, you must enable **File and Printer sharing**. Please go on to the next page.

Preparing to Use File and Printer Sharing.

The instructions below explain how to turn on file and printer sharing in Windows 95 so that your computer can be accessed by others and vice-versa.

1. Start up Windows 95. If you are asked to log in, be sure to give your correct username and password.

2. To set up sharing for the first time on a computer, click on **Start**, **Settings**, **Control Panel**, then double-click on **Network**.

3. Click on the **Configuration** tab, followed by the **File and Printer Sharing** button. The **File and Printer Sharing** window will appear.

• If you'd like others to be able to access the files on your PC's hard drive, select *I want to be able to give others access to my files*.

• If you'd like to share your printer with other users on the network, select *I want to be able to allow others to print to my printer*.

4. Click on the **OK** button. *File and Printer Sharing for Microsoft Networks* should now appear in the list of installed components.

5. Click **OK**. When asked to restart your PC, choose to do so.

Enabling File Sharing

After following the preparation instructions above, double-click on your **My Computer** icon. A window of available disk drives will appear. Using your right mouse button, click once on the drive or folder that you want to make available to other users. Click on **Sharing**, followed by the **Sharing** tab. Click on **Share As**. In the Share Name box, enter a name for the drive or folder you are sharing, (eg: C-Drive, CD-ROM, Leela, etc.).

Next, decide on the type of access that you want to give other users.

• **Read-Only access** lets other users view the files on your PC.
• **Full access** lets users create, change, or delete files on your PC.
• **Depends on Password** lets users have Read-Only and/or Full access, depending on the password that you decide to give them.

Use your mouse to select the type of file sharing access that you want other users to have. If you want to assign access password(s), type them into the Password box(es).

If you are sharing a cable modem or DSL braodband connection that you will be using to access the Internet, you should protect all of your shared drives and printers with private passwords.

When you're done, click on the **Apply** button, followed by **OK**. Your drive(s) can now be accessed from other users whenever they click on their Windows Network Neighborhood icons. If a user tries to access one of your drives or folders that's password-protected, he or she will be asked for the appropriate Read-Only or Full access password.

How To Share Printers

1. After following the steps on pages 23-24, double-click on your **My Computer** icon.

2. Click on the **Printers** folder. A window of available printers will appear.

3. Using your right mouse button, click once on the printer that you want to share with other users.

4. Click on **Sharing**, followed by the **Sharing** tab. Click on **Share As**. In the Share Name box, give a name to the printer you're about to share (Jack's HP4, for example). If you want to assign a password to the printer so only certain users can access it, type a password in the Password box. When you're done, click on the **Apply** button, followed by **OK**. Your printer(s) are now shared.

5. When you're finished, restart your PC, log into your network, and double-click on **Network Neighborhood**. You should be able to se the other computers on your network. The installation is complete.

Note: Not all printers may be shared on the network or you may require special instructions. Refer to your printer's user guide or contact your printer manufacturer.

Windows NT 4.0 Setup

The instructions below explain how to install HomeLink Phoneline + 10/100 Network PC Card's softwarer drivers for an NT 4.0 server/workstation.

You must know the type of PCMCIA controller that you have in your notebook -- PCIC compatible or CardBus. Refer to your PC's user guide or contact the manufacturer if you are not sure.

Before you begin the installation, you should have your original Windows NT CD-ROM handy. NT may ask for it in order to install special files onto your computer during the network driver setup. When this occurs, insert your CD-ROM or other media into the drive and tell Windows NT to look in the \i386 directory on the appropriate drive. For example, if your CD-ROM is drive **D:** on your system, and Windows NT is requesting a file from it, you would type in **D:\i386** and press Enter in order to inform NT of the CD-ROM's location.

Prior to installing the card, you may need to enable NT's PCMCIA services. To do this, go to page 60 in the appendix of this guide.

Installing the Software

To install the card in an NT 4.0 server or workstation:

1. Shut down your computer. Insert the HomeLink PC Card into either of your computer's card slot if you haven't already. Start up your computer. If asked to log in, do so.

2. Click on **Start**, **Settings**, **Control Panel**. Double-click on the **Network** icon.

3. If you have not already installed the networking components for NT, you will see a message window like the one on the right:

Network Configuration

Windows NT Networking is not installed.
Do you want to install it now?

Yes   No
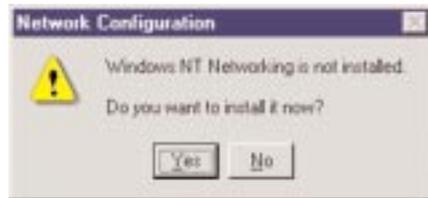
4. To install NT networking while setting up the HomeLink 10/100 PC Card, click on **Yes** and continue with step 1 on the next page. If you have already installed networking and **only** wish to set up the card, skip to step 1 on page 38.

Install NT Networking and the HomeLink Phoneline + 10/100 Network PC Card Together

1. Choose *Wired to the Network* and click **Next**.

2. When asked to provide the name of the network adapter, choose **Select from list...**
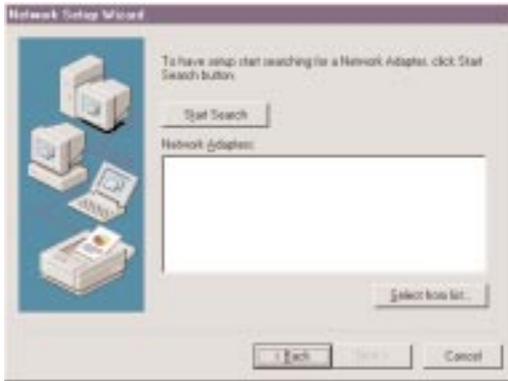
3. When the list appears, click on the **Have Disk** button.

4. Put the PC Card disk into drive A and type **a:** in the location window. Click **OK**.

5. When the Linksys adapter names are visible, choose *Linksys HomeLink Phoneline + 10/100 Network PC Card (PCM100H1) for PCMCIA slot* if your laptop's slot is set for PCIC or compatible. Choose *CardBus* if you are using a CardBus slot. Click **OK**.

6. Click **Next**. When the Network Setup wizard reappears, choose your desired Network Protocols, then click on **Next**.

7. When asked to choose the network services to install, do so. Click **Next** when you are finished. Click **Next** to install the components you have selected.

If asked to supply the path to the setup disk, type **a:** in the location box and press **Enter** or click **OK**.
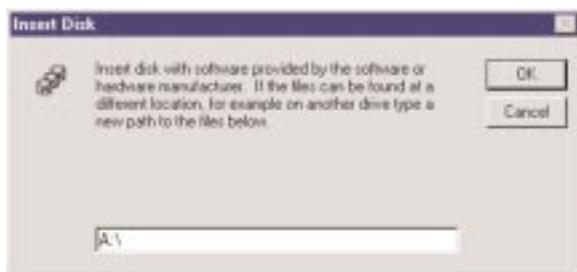
6. Setup may need to copy some Windows NT files from your original Windows NT CD-ROM. If a window appears asking for your NT setup files, type in the location of your Windows NT CD-ROM. For example, if your CD-ROM is designated as **D:**, then type **D:\i386**.

7. Setup may also need drivers from the Linksys diskette. Type **a:** or the location of the floppy disk if this window appears.

8. NT will ask you to supply the I/O Base, Interrupt, Memory and Connection Type values for the card. Choose **Autosense** for the Connection Type and **Auto** for all the others.

If you're not sure of the interrupt and other resource values that are available for use on your PC, or if you are experiencing conflict errors, click on **Start**, then **Run**. Type WINMSD and press **Enter**. Click on the **Resources** tab. Look at the IRQs that are already in use and choose one that is unused. To check the I/O values, click on the **I/O Port** button.

9. When you're finished entering your I/O, Memory and Interrupt values, click on **Continue**. NT will copy necessary workstation files to your computer.

11. If you have installed the TCP/IP protocol, the Setup will ask you if you will be obtaining IP addresses from a DHCP server. If you click **Yes**, continue on to step number 10.

If you click **No**, you will need to obtain the necessary TCP/IP information from your network server to complete the TCP/IP properties requirements.

Please Note: If you need to install the TCP/IP Protocol, contact your system administrator or refer to the Windows NT documentation. Linksys does not provide technical support for the setup or configuration of the TCP/IP protocol.

When the Network Setup Wizard reappears, configure your bindings. See your Windows NT User Guide for more information on bindings.

11. When the bindings are configured, click **Next**, followed by **Next** again to start the network.

12. When the Network Wizard window reappears, enter a name for your computer. You can name it whatever you would like, (Mary's Computer, Tardis, etc.).

13. Next, choose either Workgroup or Domain, then enter the workgroup or domain name that you want your PC to connect to. If you're not sure of the name, see your Windows NT user guide(s) or check the settings of the other PCs on your network. In most home networking situations, your computers should all have the same **Workgroup** name.

When you're finished, click on **Next**, followed by **Finish**. Choose to restart your computer. If a service pack was previously installed, you must reapply the service pack. After NT restarts, log in. Look at the HomeLink Phoneline + 10/100 Network PC Card's cable coupler. If your cabling is properly attached and the network is detected, the green Link light will be on, and the Activity (ACT) light will be flickering or solid. The installation is complete. You can now access the network at large through the Network Neighborhood icon on the Windows NT desktop.

**Install the HomeLink Phoneline + 10/100 Network PC Card
(NT Networking is Already Installed)**

1. When the Network window appears, click on the **Adapters** tab.

2. Click on the **Add** button, followed by **Have Disk**. Put the PC Card disk into drive A.

3. When asked to supply the path to the disk, type **a:** and click **OK**.

4. NT will ask you to supply the I/O Base, Interrupt, Memory value, and Connection Type for the card. You can choose **Auto** for I/O, Interrupt, and Memory. Choose **Autosense** for the Connection Type.

5. If you're not sure of the interrupt and other resource values that are available for use on your PC, or if you are experiencing conflict errors, click on **Start**, then **Run**. Type WINMSD and press **Enter**. Click on the **Resources** tab. Look at the IRQs that are already in use and choose one that is unused. To check the I/O values, click on the **I/O Port** button.

6. When you're finished, click **Close**. NT will copy necessary files to your computer.

7. When the Network window reappears, click on the **Bindings** tab. Choose your bindings.

8. Click on the **Protocols** tab and select your settings. Do the same for the **Services** tab.

9. After your bindings, settings, and services are set, click on the **Close** button. Choose to restart your computer.

If a service pack was previously installed, you must reapply the service pack.

After NT restarts, be sure to log in. Look at the EtherFast card's cable coupler. If your cabling is properly attached and the network is detected, the green Link light will be on, and the Activity (ACT) light will be flickering or solid.

The installation is complete. You can now access the network at large through the Network Neighborhood icon on the Windows NT desktop.

If You Have Problems

If the EtherFast card's coupler doesn't light up after you restart your computer, you may need to change your slot's boot setting in NT. Follow these instructions: Click on **Start**, **Settings**, **Control Panel**. Double-click on the **Devices** icon. Scroll down in the Devices list to **PCMCIA**. Click on **Startup**. Verify that the Startup Type is set to **Boot**. If it isn't, use your mouse to select it. Click **OK**, then **Close**. Choose to restart your computer.

Changing the Card Settings

For most users, the HomeLink default settings will be perfect for both Phoneline and Ethernet networking. However, you can make any necessary changes to your system's network settings by clicking on your taskbar's **Start** button, then **Settings**, then **Control Panel**, and then the **Network** icon.

Note: Only change these settings if you know what you are doing.

1. To access your HomeLink driver, click on the **Configuration** tab, highlight *Linksys HomeLink Phoneline + 10/100 Network PC Card* and click on **Properties**.
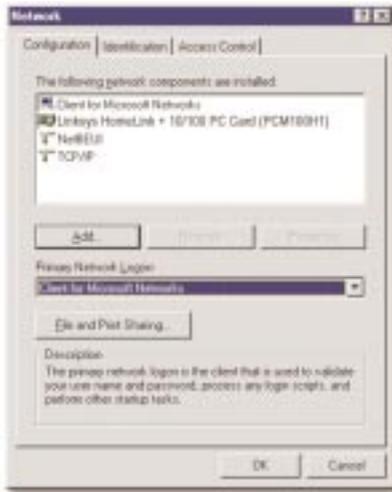
2. The Linksys HomeLink Properties window will open. Click on **Advanced**.

Ethernet Configuration

This option allows you to choose the duplex and speed performance of the HomeLink Card's RJ-45 Ethernet port. In order to change the port settings, the *Mode Selection* option must be set at **10BaseT Only**, or **10/100BaseTX Only**, or the mode must be set at **Auto Detect** with a valid link on the 10BaseT Port.

• **10Mbps Half Duplex** sets the 10BaseT port to half duplex mode. This is the default setting.

• **10Mbps Full Duplex** sets the 10BaseT port to full duplex mode.

Mode Selection

You can set the HomeLink Phoneline + 10/100 Network PC Card to default to either a 10BaseT connection or Phoneline connection. Since there are three ports, the card is set to **Auto Detect** an active connection. Auto Detect will look first for a connection on the 10BaseT port, and if one is not found, the card will default to the Phoneline connection.

You can configure the card to use only one connection type.

• **10/100 Ethernet (External)** mode will force the card to use a 10/100 connection if one is present.

• **10BaseT Ethernet (Internal)** mode will force the card to use a 10Mbps connection if one is present.

• **Phoneline** mode will force the card to use only the 1Mbps Phoneline connection.

Phoneline Configuration

You can set the Phoneline port to operate in several different modes. The phoneline port will default to **Auto Config** mode. This mode automatically sets the port to **High Power/High Speed** mode.

These port settings will only take effect if and when the Phoneline port is selected as the default port or if the card is in **Auto Detect** mode and the Phoneline link is active.

• Setting the card in **Low Power/High Speed** mode will still allow full speed on the Phoneline port, but the card will operate at a lower power consumption rate.

• **High Power/Low Speed** mode will give you a 700Kbps transfer rate over the Phoneline connection, while still allowing the card to operate at full power.

Twisted-Pair Cabling

There are different grades, or categories, of twisted-pair cabling. Category 5 is the most reliable and widely compatible, and is highly recommended. Category 3 is a good second choice. Straight-through cables are used for connecting computers to a hub. Crossed cables are used for connecting a hub to another hub (there is an exception: some hubs have a built-in uplink port that is crossed internally, which allows you to uplink hubs together with a straight cable instead).

You can buy Category 5 cabling that is pre-made, or cut and crimp your own. Category 5 cables can be purchased or crimped as either straight-through or crossed. A Category 5 cable has 8 thin, color-coded wires inside that run from one end of the cable to the other. All 8 wires are used. In a straight-through cable, wires 1, 2, 3, and 6 at one end of the cable are also wires 1, 2, 3, and 6 at the other end. In a crossed cable, the order of the wires change from one end to the other: wire 1 becomes 3, and 2 becomes 6.

straight-through cable		crossed cable	
Wire	Becomes	Wire	Becomes
1 →	1	1 →	3
2 →	2	2 →	6
3 →	3	3 →	1
6 →	6	6 →	2

The color code for the 4 wires should be as follows: Wire 1, white with an orange stripe; Wire 2, orange; Wire 3, white with a green stripe; Wire 6, green. The other four wires have to be connected as follows: Wire 4, blue; Wire 5, white with a blue stripe; Wire7, white with a brown stripe, Wire 8, brown.

RJ-45 Color Chart

|	
Wire 1 →	White with an Orange Stripe
Wire 2 →	Orange
Wire 3 →	White with a Green Stripe
Wire 4 →	Blue
Wire 5 →	White with a Blue Stripe
Wire 6 →	Green
Wire 7 →	White with a Brown Stripe
Wire 8 →	Brown

spring clip on bottom

Pin 1
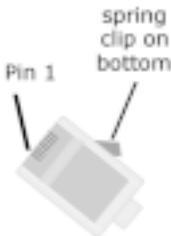
To figure out which wire is wire number 1, hold the cable so that the end of the plastic RJ-45 tip (the part that goes into a wall jack first) is facing away from you. Flip the clip so that the copper side faces up (the springy clip will now be parallel to the floor).When looking down on the coppers, wire 1 will be on the far left.

Telephone Cable

The telephone cables you use can be either crossed over or straight-through. Standard telephone cables like the ones you use everyday in your home should do the job.

Note: If you are only sharing Internet access between 2 PCs, you can connect your modem directly to your HomeLink Card using a standard telephone cable. However, if you are sharing Internet access among more than two computers, it is strongly recommended that you obtain a two-way splitter for your phone jack, or that you find another wall phone jack for your modem connection.

Forcing the HomeLink Phoneline + 10/100 Network PC Card to supply modem data from the Internet to multiple computers may result in an unstable or failed network connection.

Troubleshooting

Troubleshooting Hints for Windows

Problem: Windows doesn't detect new hardware with the HomeLink Card hardware installed, or it continues to detect the card each time I restart the PC.

Solutions
You might not have inserted the PCMCIA card correctly or securely into the appropriate slot of your computer. Check that the card is securely inserted into the appropriate slot.

The system BIOS might not be Plug-and-Play compatible, your PC's Plug-and-Play settings may not be enabled, or the motherboard may have Plug-and-Play options not supported by Windows. If you are not sure, contact your PC's manufacturer.

Problem: Windows can't locate the driver for the HomeLink Card device.

Solutions
You may have inserted the wrong diskette into your PC's drive.

The diskette may be defective or files may be missing, or you may be pointing Windows to the wrong directory or drive.

Problem: The Windows Logon screen doesn't appear after I restart my computer.

Solutions
Click on **Start**, **Shut Down**, then **Close All Programs and Logon as a Different User**. If this doesn't solve the problem, your PC's manufacturer may have disabled Windows' networking. Contact your computer's manufacturer for help.

Problem: In Network Neighborhood I can only see myself and no other computers on the network.

Solutions
Make sure that the cables are connected correctly. Make sure you are getting Link or Activity lights on both the HomeLink Card's coupler and your hub if you are using one. Try changing to a new cable that you know is working.

Verify that the HomeLink Card's Phoneline configuration is set to Auto Configuration. See the chapter entitled Changing the Card Settings on page xx for instructions on how to do this.

Try connecting your PCs using **only** the phone wire provided with the HomeLink card. Disconnect your PCs from any phone jacks and remove any telephone, modem, or other device that you have conencted to the HomeLink cards.

If the PCs are far away from each other, bring them close to each other and try connecting them directly together. This test will determine whether your phone line or your HomeLink hardware is causing your network to malfunction.

Problem: I've decided that I don't want to share a drive or printer anymore, or I have decided to physically remove a drive or printer from my network.

Solutions
You're going to have to reconfigure your File and Printer Sharing settings manually. To do so, double-click on your **My Computer** icon. Click on the **Printers** folder. A window of available printers will appear. Using your right mouse button, click once on the printer that you want to disable on the network. Click on **Sharing**, followed by the **Sharing** tab. Click on **Not Shared**. When you're done, click on the **Apply** button, followed by **OK**.

You can disable drives in the same way. In Windows Explorer, right-click on the drive you want to stop sharing. Click on **Sharing**, followed by the **Sharing** tab. Click on **Not Shared**. When you're done, click on the **Apply** button, followed by **OK**.

Problem: In Network Neighborhood, you can only see computers running the same operating system as you. For example, if you are running Windows 95, you can only see other Windows 95 computers and not any computer running Windows 98.

Solutions
Click **Start**, **Find**, then **Computer** and type the name of any other computer in the window that comes up. Click **Find Now**.

Make sure that you are using the same protocols and workgroup names on the 95 and 98 computers. To do this, click on **Start**, **Settings**, **Control Panel**, then double-click on the **Network** icon. Click on the **Configuration** tab, then click on the **Identification** tab for Workgroup settings. If any protocols are missing, add any needed protocol(s) using the **Add** button in the Network window.

If all computers are using the same protocol(s) and Workgroup name, and Windows 95 computers can't see Windows 98 computers, enable NetBIOS on all the computers using Windows 95 and 98.

IPX/SPX-compatible Protocol should be installed on all computers.

Bring up the properties of the IPX/SPX-compatible Protocol. To do this, click on **Start**, **Settings**, **Control Panel**, then open **Network** and click on the **Configuration** tab. Highlight *IPX/SPX-compatible Protocol* (only one of them) and click on **Properties**.

Click on the **NetBIOS** tab. Put a check next to *I want to enable NetBIOS over IPX/SPX* and click **OK**. Click **OK** again.

After Windows finishes copying the appropriate files, restart your computer. When you've returned to the desktop, open **Network Neighborhood** and look for the other PCs on your network.

Multiple Network PC Cards

The following information is supplied to you for reference only.

Linksys does not provide technical support on the setup or troubleshooing of multiple Network PC Cards or enabling or setup of routing in an operating system. Please refer to the documentation of your operating system in order to find out more on how to setup two Network PC Cards in a PC to communicate with each other. The phoneline card can use either its RJ-45 Fast Ethernet connection or RJ-11 phone wire connection at any given time. Both connections can not be used at the same time.

Connecting to an Existing Network

If you already have a Fast Ethernet network and would like to add the Phoneline card to this network, you need to use the card's RJ-45 connector and connect the card to the existing Fast Ethernet network. It is not possible to connect the card via RJ-11 directly to an existing Ethernet or Fast Ethernet network. This can be done, but it requires the operating system to be able to route the packets from an Ethernet card to the HomeLink card. Two cards have to coexist in a PC (one Ethernet card and one HomeLink card). The operating system has to be able to route packets between Network PC Cards, otherwise the two different segments will not communicate with each other. Cable modems are often an exception. See the next section for details about cable modem sharing.

If you have an Ethernet or Fast Ethernet network running along side of a HomeLink phoneline network in your home, you may have noticed that the two networks of different speeds cannot communicate with one another. If you would like to share files, printers and Internet access between your HomeLink network and your 10/100 network, you can do so with a piece of hardware called a **Bridge**.

A bridge is a device that trasmits data packets from one type of network to another. The Linksys **HomeLink Broadband Network Bridge** connects your 10/100 network to your 1Mbps HomeLink network.

For more information about the HomeLink Broadband Network Bridge, visit the Linksys Web site at http://www.linksys.com.

Using a Cable Modem or DSL Modem and the HomeLink PC Card

If you are currently using a HomeLink Phoneline + 10/100 Network PC Card with a cable or DSL modem, it is recommended that you connect your cable modem to a 10BaseT/100BaseTX hub for faster access speeds. Keep in mind that some cable modems may not be connected to a hub and require a direct connection to a Network PC Card. Check with your provider if you have any questions regarding this matter.

Some cable modem providers may prevent the use of proxy software to share the Internet. The best course of action would be to discuss the matter with your cable service provider, then consult your Windows documentation to find out what is required to access your high-speed Internet connection from multiple PCs in your home.

Connecting 10Mbps Broadband and 1Mbps HomeLink

Since your 1Mbps HomeLink Phoneline + 10/100 Network PC Card runs at a slower speed than your 10Mbps broadband connection, you will need special hardware to connect the two together. You can do so with a device called a **Bridge**.

A bridge is a device that trasmits data packets from one type of network to another. The Linksys **HomeLink Broadband Network Bridge** can seamlessly connect your 10/100 network to your 1Mbps HomeLink network.

For more information about the HomeLink Broadband Network Bridge, visit the Linksys Web site at http://www.linksys.com.

Linux, Open Source and Beta Operating Systems

Linksys does not provide technical support for **Linux**, ***BSD**, or other freeware and open source operating systems. Although many Linksys products have been proven to perform well under Linux and other freeware OSes, technical support for setup and troubleshooting is not provided. For information on where to find device drivers and setup instructions for Linux and other freeware OSes, visit the support pages and FAQ files on the Linksys website at **www.linksys.com**.

Beta OSes, such as Windows 2000 beta, do **not** receive technical support. When Windows 2000 is officially released by Microsoft, then Linksys will provide technical support.

Manually Installing the Network Components in Windows

There may be times when you might need to manually install missing Windows networking components.

1. Click on **Start**, **Settings**, then **Control Panel**.

2. Double-click the **Network** icon. The Network window appears.

3. Click on the **Configuration** tab. Linksys recommends that the following network components are installed for you to properly connect to your HomeLink network. Of course, every network is different, so your settings will depend on what settings are on your various PCs. If you have a broadband Internet conneciton, your sevice provider may recommend different settings. Talk to your broadband service provider if you have questions about which protocols are needed.

Client for Microsoft Networks
Linksys HomeLink + 10/100 PC Card (PCM100H1)
TCP/IP
NetBEUI
IPX/SPX

If the required components are missing, add them as follows:

Adding NetBEUI

Click on the **Add** button. Select *Protocol*, then click on **Add**. Under *Manufacturer*, highlight **Microsoft**. Under *Network Protocol*, highlight **NetBEUI**. Click **OK**.

Adding Client for Microsoft Networks

If you plan on connecting to an NT file server or peer-to-peer network, click on the Add button. Highlight *Client* and click on **Add**. Select Manufacturer and choose *Microsoft*. In the Network Client box, highlight *Client for Microsoft Networks* and click **OK**.

Adding Client for Netware Networks

If you plan on connecting to a Novell NetWare workstation, click on the **Add** button. Highlight *Client* and click on **Add**. In the Network Client window, select *Manufacturer* and choose **Microsoft**. Click **OK**.

Adding IPX/SPX-compatible Protocol

Click on the **Add** button. Choose *Protocol* and click on the **Add** button. Select *Manufacturer* and choose **Microsoft**. Under the Network Protocol box, highlight *IPX/SPX-compatible protocol*. Click **OK**.

If you need to install the **TCP/IP protocol**, refer to your system administrator or your Windows 95 documentation. Linksys does not provide technical support for the configuration or troubleshooting of the TCP/IP protocol.

How to Use the HomeLink 10/100 Notebook Network Card's Generic Services Under DOS-Based Systems

The software disk provided with the HomeLink Phoneline + 10/100 Network PC Card includes generic socket and card services that can be used to enable the card. The card's hardware-specific client enabler will only enable the HomeLink Phoneline + 10/100 Network PC Card. If you want to use other PCMCIA cards in the future, you will need to obtain additional services for those card(s) before you'll be able to use them. The enabler will work only with standard PCMCIA slots. It may not function properly with CardBus slots.

When enabler loads itself into memory, it tries to choose IRQ and I/O base address values for the HomeLink PC Card not already in use.

The enabler also checks to see if any other service packages are loaded. If there are any services already present in memory, enabler will attempt to load itself without disturbing them.

Open up your config.sys file in a text editor. Scroll through the file. Find the line that reads:

```
DEVICE=C:\EMM386.EXE
```

It will probably be located near the beginning of the file. You will need to add a command to the end of the EMM386 command in order to reserve an area of memory for the HomeLink PC Card's client enabler to use. Add the following command to the end of the EMM386 line:

```
NOEMS X=D000-DFFF
```

so that the new EMM386 line now looks something like this (it may vary slightly):

```
DEVICE=C:\EMM386.EXE NOEMS X=D000-DFFF
```

If there are already commands on the EMM386 line, try not to disturb them when you add the NOEMS X=D000-DFFF

Note: Plug-and-Play operating systems such as Windows 95 and 98 do not require the use of the enabler or memory exclusion.

Windows NT has limited support for PCMCIA cards and will not require the enabler.

Enabling PCMCIA Services in Windows NT

To enable card and socket services in NT, click on **Start**, **Settings**, **Control Panel**. Double click on **Devices**. Scroll down the list until you find **PCMCIA**. Highlight it and click **Startup** and choose **Boot** from the options.
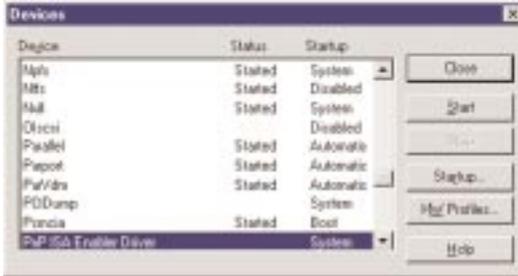
After you are done click on **Close** and restart your computer. After the PC is restarted go to the same window and make sure the service is Started. If the service can not be started, see your notebook's documentation or contact the manufacturer of the notebook.

Specifications

Standards	IEEE 802.3 IEEE 802.3u, HPNA 1.0, 1.1
Transfer Rate	Phone Line Half Duplex: 1Mbps 10BaseT Half Duplex: 10Mbps 10BaseT Full Duplex: 20Mbps (Aggregate) 100BaseTX Half Duplex: 100Mbps 100BaseTX Full Duplex: 200Mbps (Aggregate)
LEDs	Link/Act, 10/100, Phone Line
Ports	1 Auto-Sensing 10Mbps/100Mbps RJ-45 Port 2 Standard Modular Telephone RJ-11 Ports
Cabling	Phone Line: Standard Modular Phone Cable 150 Meters (500 feet) Max. (Total Aggregate Distance Between All Network Nodes) 10BaseT: UTP/STP Category 3 or Better 100 Meters (328 feet) Max. 100BaseTX: RJ-45 UTP/STP Category 5 100 Meters (328 feet) Max.
Power	Ethernet: 5V DC, 305mA Phone Line: 5V DC, 158mA
Bus Type	16-bit PCMCIA
Certification	FCC Class B, CE Mark (Commercial)
Dimensions	3.4" x 2.1" x 0.2"
Weight	1.7 oz.
Operating Temp.	32ºF to 122ºF (0ºC to 49ºC)
Storage Temp.	-4ºF to 158ºF (-20ºC to 70ºC)
Operating Humidity	10% to 85% Non-Condensing
Storage Humidity	5% to 90% Non-Condensing

Customer Support

For help with the installation or operation of your HomeLink Phoneline + 10/100 Network PC Card, contact Linksys Customer Support at one of the phone numbers or Internet addresses below.

Customer Support	949-261-1288
Fax	949-261-8868
Email	support@linksys.com
Web	http://www.linksys.com
FTP Site	ftp.linksys.com

LINKSYS®

http://www.linksys.com